

Stanford Teledermatology - Technical Demonstration

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INTRODUCTION

Patients may be evaluated by two different methods of teledermatology consultation at Stanford. In the asynchronous mode, a referring physician at the remote site can elect to capture high-resolution images of suspicious or unusual skin lesions and send them to the dermatologist at Stanford for review. If an immediate or more extensive evaluation is necessary, a live video-conference examination may be requested and a remote collaborative care session established. In this mode, the patient, primary care provider, and specialist all participate in the evaluation. High-resolution still video images are captured, transmitted, and reviewed during both live and asynchronous teleconsultations and become a part of the electronic medical record created for every patient at Stanford.

Both methods allow for identification of more difficult cases that may require referral to the dermatologist's office. Live consultation between physicians during a single clinic visit is advantageous to the patient and provides the referring physician an opportunity to learn more about the condition directly from the specialist. In either case, the patient receives prompt attention and appropriate management for their skin disorder.

Accuracy of telediagnosis by dermatologists in a study by Murphy *et. al.* was found to be 85 to 89% of that compared with viewing an actual photographic slide of the same patient's skin disorder (1). Physician assessment of moderately low-resolution digital images versus high-resolution full-color photographs of pigmented lesions has been studied. While significant differences in both intraobserver and interobserver interpretations of skin images were detected, the overall results were nearly identical for both digital images and color photographs (2).

METHODS

The image capture equipment installed at the remote primary care providers office for the Stanford system includes a high-resolution three CCD chip video camera (Sony) mounted with a 107mm lens system (Fujinon) for diagnostic image capture and a single

CCD chip camera (Canon) for video-conferencing. Equipment located at both the remote site and at the Stanford base station include a Codec (CLI Rembrandt), PC-pentium (HP), Inverse multiplexer (Ascend), main video camera single CCD (Canon), audio system (Shure), 17" PC monitor (HP), video switch (Image Video Systems), and the telemedicine application (md/tv Housecall).

One general principle for the entire system is ease of use for the primary care provider. With the addition of a hand-held remote controller to the system, operation of the high-resolution camera is simple and leaves the clinician free to concentrate on examining the patient and communicating with the consultant.

RESULTS

Pilot Study

In the first few sessions of live teledermatology consultations, four to five patients were seen per clinic for 30 minutes per patient. A total of 15 patients were seen and all diagnoses made by the consulting faculty dermatologist were confirmed by an additional faculty dermatologist with 100% concordance. These patients were new to the primary care providers and would have been referred to the group practice's dermatologist if this system had not been available for teleconsultation.

In this presentation we will demonstrate use of the telemedicine system at both the consultant's base station, and the primary care station.

References

1. Murphy RLH *et. al.* Accuracy of dermatologic diagnosis by television. *Arch Derm* 1972; 105:833-35.
2. Perednia D, Gaines JA, Rossum AC. Variability in physician assessment of lesions in cutaneous images and its implications for skin screening and computer-assisted diagnosis. *Arch Derm.* 1992;128:357-64.